

Breynia oblongifolia, T. Mueller. *Carex declinata*, Boott.
Deeringia celosioides, R. Brown. *Cladium asperum*, F.v.M.
Desmodium brachypodum, Gray. *Stipa verticillata*, Nees.
Haloragis alata, Tarquin. *Cenchrino australis*, R. Brown.
Backhousia myrtifolia, Harvey. *Platycerium aloicorne*, Desvaux.
Eucalyptus maculata, Hooker. *Asplenium caudatum*, G. Forster.
Psychotria loniceroides, Sielieff. *Polypodium tenellum*, G. Forster.

To these must be added still, *Santalum obtusifolium*, R. Brown, but this one has been traced also into the colony of Victoria, where Mr. Reader found it very sparingly on the Genoa. It may be added that he found *Ehretia acuminata* and *Marsdenia flavescens*, within about thirty miles of the boundary-line, and that he noticed *Eucalyptus maculata*, and *Macrozamia spiralis*, within a few miles of Twofold Bay. *Eucryphia Moorei*, was traced into Victorian territory before by Mr. C. H. Walter.

Among the Plants shown for the first time to be natives of New South Wales by Mr. Reader's collections, are :—*Acacia supporosa*, F.v.M., *Aster axillaris*, F.v.M., and *Lepidosperma elatius*, of Labillardière; these were obtained near Mount Dromedary. He learnt also that *Livistona australis*, occurs in the coast-gullies south of Eden.

EUCALYPTS OF THE COUNTY OF CUMBERLAND: THEIR CLASSIFICATION,
HABITAT, AND USES.

BY THE REV. DR. WOOLLS, D.D., F.L.S., &c.

Now that, through the labours of Baron F. von Mueller, the species of *Eucalyptus* occurring in the County of Cumberland have, for the most part, been accurately defined, it may be useful to arrange them according to the peculiar features which they present, and to place on record such particulars respecting them as may lead to more accurate investigation of their properties and uses.

Although the Colony of New South Wales has been established ninety two years, it is only since the publication of the Baron's *Eucalyptographia*, that some of the commonest species have been identified, and referred to their proper places in the systematic arrangement. The descriptions in the third volume of the *Flora Australiensis*, founded on specimens forwarded to Europe from time to time since the establishment of the Colony, afford indeed a most valuable basis for the study of the genus, and the greatest credit is due to Mr. G. Bentham, C.M.G., for the manner in which he has thrown together the researches of all previous writers on our *Eucalypts*. That eminent Botanist, however, notwithstanding all the information which he was enabled to collect, had many difficulties to contend with, for, not having the advantage of seeing the trees in their native forests, or having any means of distinguishing the species, excepting from the dry material before him and the imperfect notes of collectors, "he was compelled," he tells us, "to establish groups upon such characters as appeared to him the most constant among those which were supplied by the specimens." The labours of Mr. Bentham in thus dealing with some 135 species are beyond all praise, and whether the artificial mode of classification which he elaborated be ultimately adopted or not, we cannot but admire the patient investigation and powers of organization which he has exhibited. With that candour, however, which characterises great minds, Mr. Bentham acknowledged his inability to devise any system of classification which is not liable to objection; and therefore, whilst regarding the series, suggested by himself, as simply provisional, he expresses a hope, that Baron Mueller may be able to give to the Scientific world "a truly natural arrangement founded upon the proposed cortical or any other system, which experience may induce him to adopt." In the work now in course of publication, the Baron is simply figuring and describing species, and collecting all such information respecting them, as may be useful in a scientific or industrial point of view;

and whilst he brings out fully in sectional and magnified drawings the figure and opening of the anthers, for the purpose of illustrating Mr. Bentham's artificial system, he also furnishes data, partly from his own observations, and partly from those of his correspondents in Australia, for grouping the species according to the nature of their bark.

Of the species now known in Australia—probably about 150—28 are indigenous in the County of Cumberland, and, according to the artificial system, they may be placed in the following order:—

(1.) *Renantheræ*, that is such species as have for the most part, perfect anthers of a uniform shape, viz.

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| 1. <i>E. radiata</i> , (Sieb.) | 5. <i>E. piperita</i> , (Sm.) |
| 2. <i>E. obtusiflora</i> , (DC.) | 6. <i>E. pilularis</i> , (Sm.) |
| 3. <i>E. capitella</i> , (Sm.) | 7. <i>E. acmenoides</i> , (Schan.) |
| 4. <i>E. eugenioides</i> , (Sieb.) | |

(2.) *Heterostemonæ*, such as have the outer stamens anantherous, whilst the perfect ones are small, globular, or truncate, viz.

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| 1. <i>E. sideroxylon</i> , var. of <i>E.</i> | 3. <i>E. hæmastoma</i> , (Sm.) |
| <i>leucoxylon</i> , (F.v.M.) | 4. <i>E. Sieberiana</i> , (F.v.M.) |
| 2. <i>E. paniculata</i> , (Sm.) | |

(3.) *Porantheræ*, such as have the stamens all perfect, and the anthers small and globular, opening in small circular pores, viz.

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| 1. <i>E. polyanthema</i> , (Schau.) | 3. <i>E. hemiphloia</i> , (F.v.M.) |
| 2. <i>E. largiflorens</i> , (F.v.M.) | |

(4.) *Micrantheræ*, such as have the anthers very small, opening in lateral slits, viz.

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| 1. <i>E. siderophloia</i> , (Benth.) | 3. <i>E. crebra</i> , (F.v.M.) |
| 2. <i>E. sp.?</i> (F.v.M.) | |

(5.) *Normales*, such as have the stamens all perfect, the anthers oblong-ovate, or nearly globular, the cells perfectly distinct, parallel and opening longitudinally, viz.

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| 1. <i>E. longifolia</i> , (Link & Otto.) | 7. <i>E. saligna</i> , (Sm.) |
| 2. <i>E. robusta</i> , (Sm.) | 8. <i>E. resinifera</i> , (Sm.) |
| 3. <i>E. botryoides</i> , (Sm.) | 9. <i>E. corymbosa</i> , (Sm.) |
| 4. <i>E. viminalis</i> , (Labill.) | 10. <i>E. maculata</i> , (Hook.) |
| 5. <i>E. tereticornis</i> , (Sm.) | 11. <i>E. eximia</i> , (Schau.) |
| 6. <i>E. punctata</i> , (DC.) | |

This system of grouping the species has its merit in the arrangement of specimens for the herbarium, and also in enabling the observer to identify any species which is remarkable for the shape or opening of its anthers ; but it labours under two defects, viz., that it places in close proximity trees differing materially in bark, wood, and fruit ; and that it sometimes separates widely those species. which, in the minds of the Colonists, must ever be associated with each other.

The cortical system of Baron Mueller, therefore, is the more natural and practical, and although in individual trees, the bark may differ sometimes from the typical character of the section in which it is placed, yet there is little difficulty in determining, from a comparison of several trees, whether a species should be grouped with the smooth-barked, half-barked, or fully barked kinds. Solitary specimens of the common Grey Gum (*E. tereticornis*,) have sometimes been found with fibrous bark on the butt ; and, on the other hand, the Box (*E. hemiphloea*) and the Woolly Butt (*E. longifolia*) vary occasionally from the ordinary type in proportion to their age and the nature of the soil. The Blue Gum also (*E. saligna*), which, for the most part, has very smooth bark, is found here and there with rough bark on the butt.

Baron Mueller in taking an extensive view of specimens from all parts of Australia, is disposed to amalgamate species differing very much in the character of the bark, and he refers the aberrations from typical form to geological considerations, the elevation above the sea-level, and the range of temperature. The deviations, to which I refer, are in some instances very remarkable, and

should they be proved to result from local causes, as that learned writer suggests, many of the so-called species of *Eucalypts* will be regarded as mere varieties. As it would be premature to enter upon this question, until a patient investigation of all the known species has demonstrated the value of Mr. Bentham's artificial system, I propose to group the species of the County of Cumberland according to the cortical system of the Baron, and then to treat of them individually.

(1.) *Leiphloia*, such as have the bark smooth on every side, after the shedding of the outer layer, including the trees commonly called Flooded Gum-trees, White Gum-trees, or Gum-trees in general. This section is well-defined and comprises about a third of the *Eucalypts* in the County of Cumberland.

(2.) *Hemiphloia*, such as have the bark in the lower part of the trunk, persistent, wrinkled, and full of clefts, in the upper part and in the branches, rendered smooth by the shedding of the outward layer. The common Box and Black-butt may be regarded as typical of this section, but, as it will be seen in the process of inquiry, some species pass from the *Hemiphloia* to the *Leiphloia* as they advance in age.

(3.) *Rhytiphloia*, such as have the bark everywhere persistent wrinkled, full of clefts, and solid within, as the trees called Mahogany and Bloodwood, including some of the largest trees in the neighbourhood of Sydney.

(4.) *Pachyphloia*, such as have the bark for the most part persistent, wrinkled, and fibrous within. Of this section, the Stringy Bark is the type.

(5.) *Schizophloia*, such as have the bark everywhere persistent, deeply furrowed, and solid within. This section comprises all the Iron Barks.

According to this system, the species of the County of Cumberland will stand in the following order :—

(Section I., LEIOPHLOIÆ.)

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| 1. <i>E. radiata</i> , (Sieb.) | 5. <i>E. tereticornis</i> , (Sm.) |
| 2. <i>E. saligna</i> , (Sm.) | 6. <i>E. punctata</i> , (DC.) |
| 3. <i>E. hæmastoma</i> , (Sm.) and
var. <i>E. micrantha</i> (DC.) | 7. <i>E. maculata</i> , (Hook.) |
| 4. <i>E. viminalis</i> , (Labill.) | 8. <i>E. obtusiflora</i> , (DC.) |

(Section II., HEMIPHLOIÆ.)

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| 1. <i>E. Sieberiana</i> , (F.v.M.) | 4. <i>E. longifolia</i> , (Link & Otto.) |
| 2. <i>E. pilularis</i> , (Sm.) | 5. <i>E. largiflorens</i> , (F.v.M.) |
| 3. <i>E. hemiphloia</i> , (F.v.M.) | |

(Section III., RHYTIPHLOIÆ.)

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| 1. <i>E. acmenoides</i> , (Schau.) | 5. <i>E. corymbosa</i> , (Sm.) |
| 2. <i>E. botryoides</i> , (Sm.) | 6. <i>E. eximia</i> , (Schau.) |
| 3. <i>E. robusta</i> , (Sm.) | 7. <i>E. polyanthema</i> , (Schau.) |
| 4. <i>E. resinifera</i> , (Sm.) | |

(Section IV., PACHYPHLOIÆ.)

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| 1. <i>E. capitella</i> , (Sm.) | 3. <i>E. piperita</i> , (Sm.) |
| 2. <i>E. eugeniioides</i> , (Sieb.) | |

(Section V., SHIZOPHLOIÆ.)

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| 1. <i>E. siderophloia</i> , (Benth.) | 4. <i>E. paniculata</i> , (Sm.) and var.
<i>angustifolia</i> , (Benth.) |
| 2. <i>E. sp. ?</i> (F.v.M.) | |
| 3. <i>E. crebra</i> , (F.v.M.) | 5. <i>E. leucoxylon</i> , (F.v.M.) var.
<i>sideroxylon</i> , (Sieb.) |

With one exception, (viz. *E. obtusiflora*) all the species mentioned in this list are trees, but, it may be remarked, that none of them attain the gigantic dimensions of *E. amygdalina*, (the "Giant Eucalypt" of Victoria), or *E. diversicolor*, (the "Karri" of Western Australia), which, in favourable localities, are known to have exceeded 400 feet in height, with a diameter of 25 feet. It is probable that no *Eucalypt* in the County of Cumberland exceeds 160 feet, whilst the fruit of all the species is comparatively small, even in the largest trees. The fruit of *E. Youngiana*,

(F.v.M.) in South Australia sometimes exceeds two inches in diameter, which is about four times that of *E. longifolia*, or our common Woolly Butt, a species remarkable amongst the *Eucalypts* of New South Wales for the size and thickness of its seed-vessel.

ON A RARE SPECIES OF PERCH, FROM PORT JACKSON.

BY E. P. RAMSAY, F.L.S., CURATOR OF THE AUSTRALIAN MUSEUM,
SYDNEY.

ANTHIAS LONGIMANUS, *Gunther*.

Anthias longimanus, Gunth., Cat. Fishes, Vol. I., p. 94.

D. 10/20. A. 3/8. V. 1/5.

As this fish is apparently new to our waters, the following notes may be of interest to the Society :

The horizontal diameter of the eye is one-fourth of the length of the head, and equal to its distance from the snout. The height of the body is one-third of the length, exclusive of the caudal fin, the length of the head is three times and two-thirds in the same. Snout very short, mouth oblique ; the maxillary reaches to below the anterior third of the eye. The præoperculum is finely serrated on both limbs and rounded at the angle ; the operculum has a flat spine at its upper angle, and a smaller flat spine below it with a denticulated margin. The dorsal fin is low, the third spine the longest, the membranes connecting the spines and rays are clothed with scales for two-thirds of their height ; the pectorals are long, narrow, of twenty rays, much longer than the head, and reach to the fourth dorsal ray, and first anal spine ; the anal is moderate, its tip reaching to the vertical from the last dorsal ray ; the ventrals are inserted just behind the vertical from the base of the pectorals, and are a little longer than half their length. The lateral line terminates about six or seven scales from the base of the tail, the upper lobe of which is the longest. The space